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(58) Field of search

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(54) Collapsible road sign

(57) A portable road sign comprises a collapsible supporting frame 10 and a sign plate which, in use, is supported by the frame 10. The frame comprises two frame members 14 which cooperate with corresponding portions of the plates to provide a sliding fit between the plates and the frame. This permits the plates to be slid with respect to the frame between a position in which the plates are mounted on the frame for use and a position in which the plates are dismounted from the frame. The frame 10 is collapsible after the plates have been dismounted.

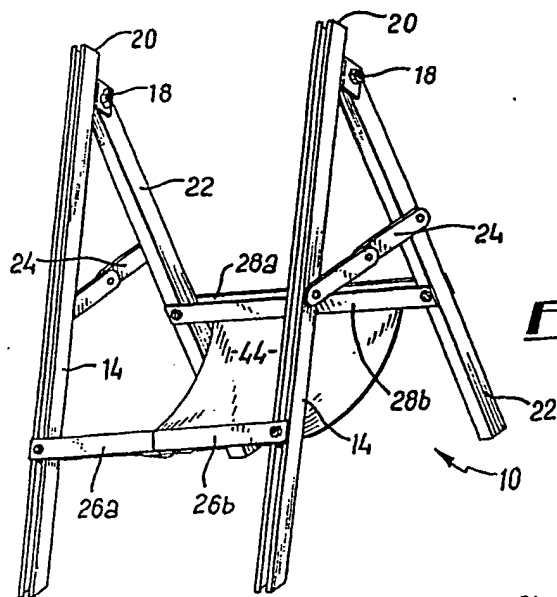


FIG. 1

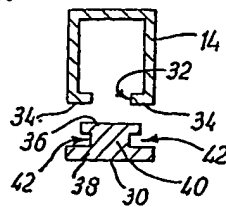
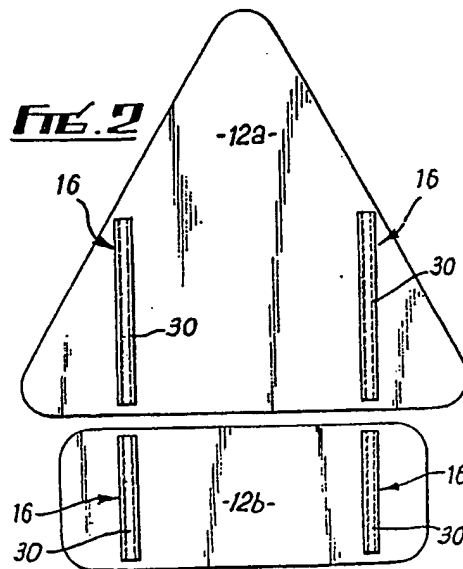
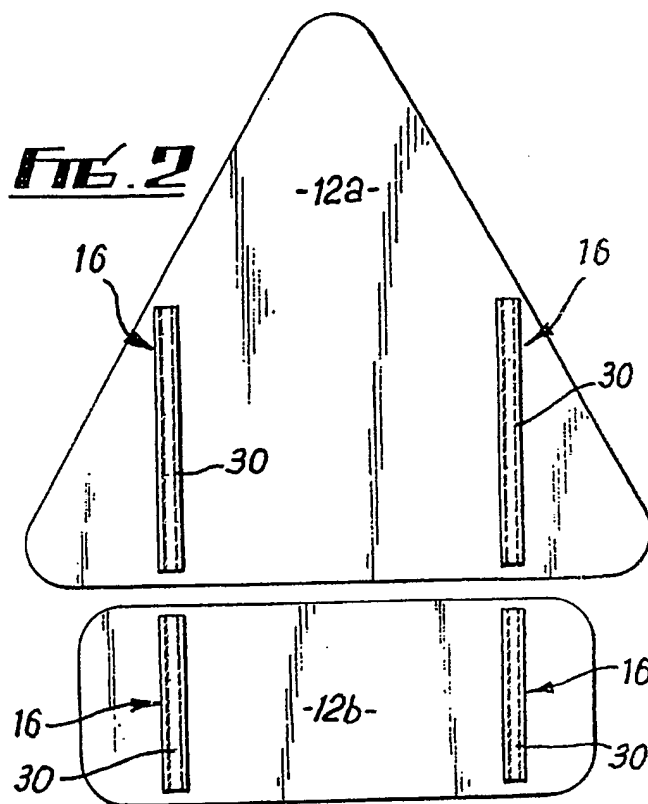
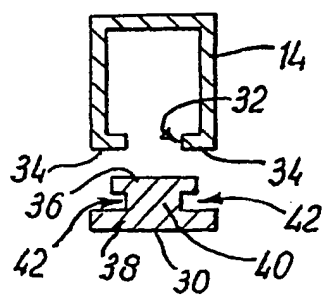
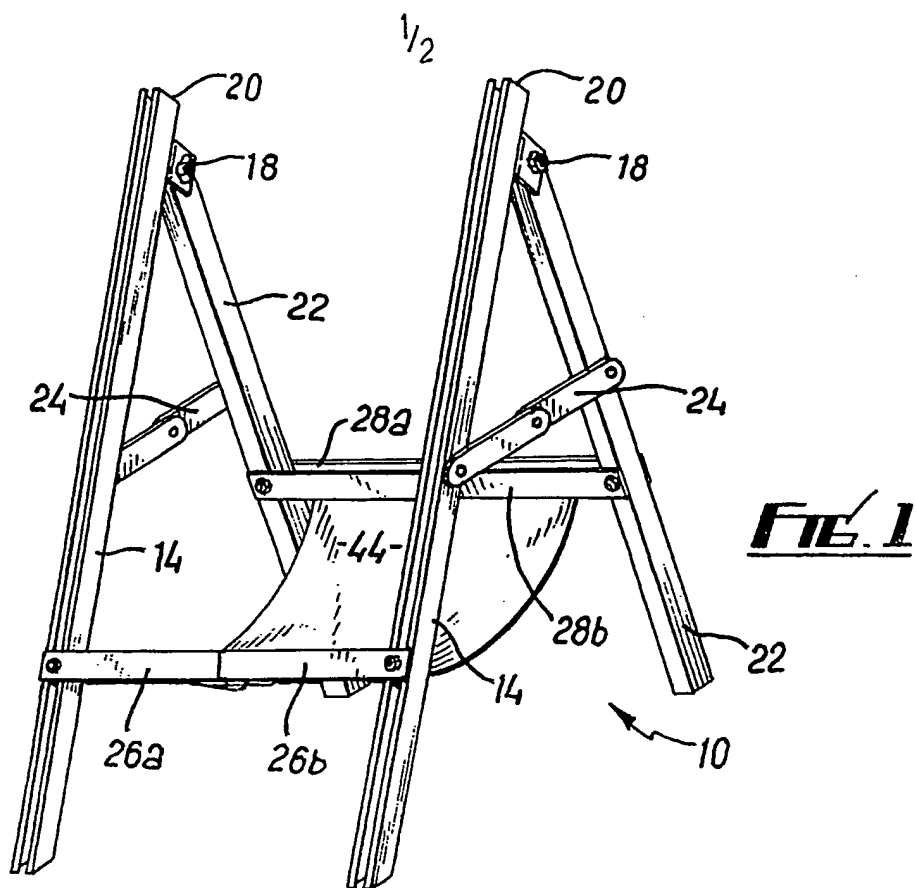


FIG. 3

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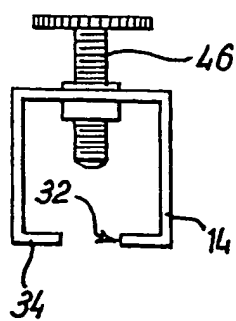


FIG. 4

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FIG. 5

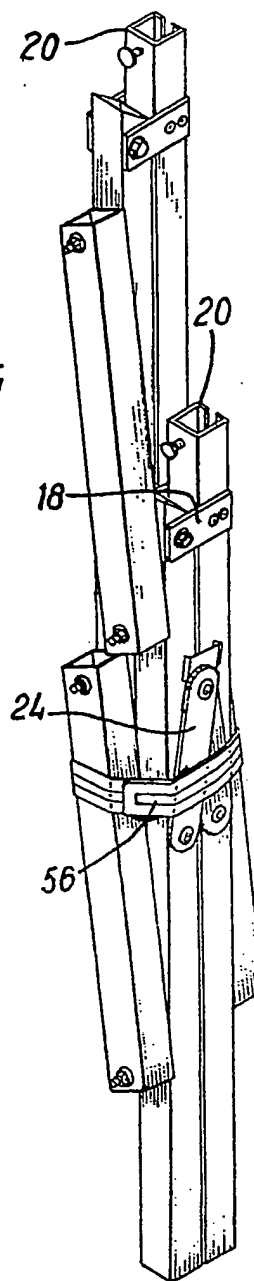
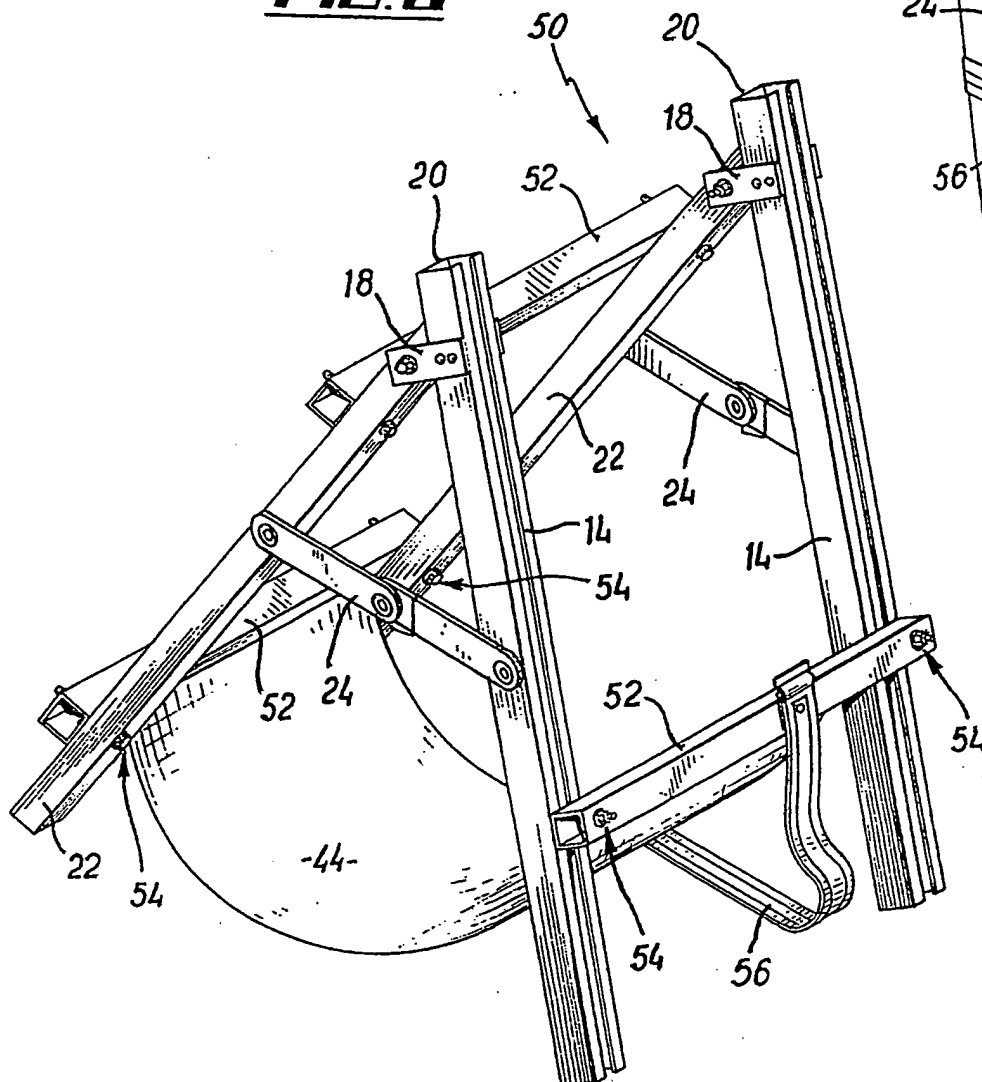


FIG. 6



members which each cooperate with a corresponding portion of the plate to provide a sliding fit as aforesaid. The or each frame member may extend generally upwardly, in use, whereby the plate may be slid upwardly or downwardly for mounting on or dismounting from the frame.

The frame may comprise two forward members which, in use, are parallel and extend generally upwardly, and at least one rearward member which, in use, extends between the ground and a point at or near the top of the forward members, the forward and rearward members being hingedly connected at the said point to allow the frame to be collapsed. The forward members may each be cooperating frame members as aforesaid. The forward members may be connected to each other by elongate connecting members. The elongate connecting members may be hingedly attached to the forward members. The elongate connecting members may be hingedly attached at one end to respective forward members, and hingedly connected together at their other ends. Two rearward members may be connected by elongate connecting members. The elongate connecting members may be hingedly attached to the rearward members. The elongate connecting members may be hingedly attached at one end to respective rearward members, and hingedly connected together at their other ends. Releasable catch means may be

provided, operable to lock one or more of the hinge connections.

At least one cooperating frame member may provide an open elongate channel for receiving and engaging the corresponding portion of the plate. The channel preferably has an elongate mouth which is narrower than the main region of the channel, the corresponding portion of the plate being sufficiently wide to be prevented from leaving the channel through the mouth, whereby the corresponding portion may slide relative to the channel. The channel mouth may comprise a flange which runs along an elongate edge of the mouth for slidably engaging a corresponding groove in the plate. The channel may have a flange as aforesaid running along both elongate edges of the mouth.

The corresponding portion of the plate preferably consists of an elongate head whose transverse extent is greater than the transverse extent of the mouth and is attached to the plate by means of a neck, there being a groove located between the plate and the head to one side of the neck for receiving the flange when the head is received in the channel.

Releasable locking means may be operable to permit

or prevent the frame and the plate sliding relative to each other. The locking means may comprise a member mounted on the frame or plate and movable between a first position in which the plate or frame, respectively, is engaged to prevent sliding as aforesaid, and a second position in which the plate or frame, respectively, is free to slide as aforesaid. The said member may be a threaded member which is threadedly movable between the first and second positions.

The frame member and/or the corresponding portion are preferably extruded from plastics material.

The frame may incorporate a sheet of flexible material which provides a generally horizontal ballast-supporting surface when the frame is erect.

The invention further provides a supporting frame for a temporary road sign of the type defined above. The invention also provides a sign plate for a temporary road sign of the type defined above. The invention also provides a temporary road sign system comprising at least one frame as aforesaid and a plurality of plates which are interchangeably mountable on the frame.

Embodiments of the present invention will now be

described in more detail, by way of example only, and with reference to the accompanying drawings in which:

Fig. 1 is a front perspective view of a collapsible supporting frame for a temporary road sign according to the invention;

Fig. 2 is a rear view of two sign plates for a temporary road sign according to the invention;

Fig. 3 shows cross-sections of parts of the frame and plates;

Fig. 4 is a cross-section of part of the frame, showing a locking arrangement;

Fig. 5 is a perspective view of a second collapsible supporting frame for a temporary road sign according to the invention; and

Fig. 6 shows the frame of Fig. 5 in the collapsed state.

The drawings show elements of a temporary road sign which comprises a collapsible supporting frame 10 and sign plates 12a, 12b which, in use, are supported by the

frame 10. The frame comprises two frame members 14 which cooperate with corresponding portions 16 of the plates 12a,12b to provide a sliding fit between the plates and the frame. The sliding fit permits the plates 12a,12b to be slid with respect to the frame 10 between a position in which the plates are mounted on the frame 10 for use, and a position in which the plates 12a,12b are dismounted from the frame 10.

In more detail, the frame 10 consists of two forward legs 14 which are parallel to each other. Hinges 18 connect each frame member 14 at or near its upper end 20 to the top of a corresponding rear leg 22. The hinges 18 contribute to the collapsibility of the frame by allowing the rear legs 22 to be folded towards the front frame members 14. Collapsible braces 24 may be provided between each front frame member 14 and the corresponding rear leg 22 for increased stability, each brace consisting of two elongate members hingedly connected at one end to the front frame member 14 or rear leg 22 respectively, and hingedly connected together at their other ends. The connection between the elongate members may incorporate a releasable locking arrangement, such as a lockable hinge or a locking clip. This enhances the stability of the erect frame.

Each front frame member 14, rear leg 22 and brace 24 thereby forms an A-frame. The front frame members 14 are connected together by elongate members 26a,26b, and the rear legs 22 are connected together by elongate members 28a,28b. Each pair of elongate members 26a,26b, 28a,28b is hingedly connected together midway between the A-frames, and the outer ends of the elongate members 26a,26b, 28a,28b are hingedly connected to the front frame members 14 or rear legs 22. Consequently, the A-frames can be brought together by "breaking" the braces formed by the elongate members as they rotate about the various hinges. The stability of the erect frame may be enhanced by providing releaseable catches or locks at one or more of the hinges.

The front frame members 14 are elongate channel members having a cross-section shown in Fig. 3 and to be described later in more detail.

The plates 12a,12b are conventional in size and shape and bear standard symbols on their front faces. On the rear face of the plates, shown in Fig. 2, each plate 12a,12b carries two parallel elongate members 30 which are extruded from plastics material and have a profile shown in Fig. 3.

Turning to Fig, 3, the channel section of the front frame members 14 is generally square, but part of one face is removed to leave an elongate mouth 32 running along the whole length of the member 14, and flanked by flanges 34 which make the mouth 32 narrower than the main region of the channel. The profile of the elongate members 30 is complementary to the profile of the mouth 32 and flanges 34. That is, the elongate members 30 consist of a relatively wide head 36 attached to the main body 38 by means of a relatively narrow neck 40. Consequently, a groove 42 is formed to either side of the neck 40, between the head 36 and the main body 38. Accordingly, by offering the end of the elongate member 30 to the end of a frame member 14, the flanges 34 can be received in the grooves 42 to provide a sliding fit between the elongate member 30 and the frame member 14.

Returning to Fig. 2, the elongate members 30 are attached to the rear of the plates 12a,12b, for instance by using strong double-sided adhesive tape. The members 30 are parallel and are spaced apart by a distance which corresponds to the separation of the front frame members 14 when the frame 10 is erect.

In the erect frame 10, the channel members 14 have the mouths 32 open to the front. In consequence, the

lower ends of the elongate members 30 can be offered to the top ends of the frame members 14 so that the two members 30 on a single plate 12 simultaneously engage respective frame members 14, whereupon they may be slid down the frame members 14 to the desired position and thereafter be supported by the frame. If appropriate, the frame members 14 can be sufficiently long to receive more than one plate 12 in order to construct composite signs. Stops may be provided in the channels to prevent the plates 12 sliding too far down the frame members 14, or alternatively the dimensions of the channel and elongate members may be chosen to provide sufficient friction to retain the plate 12 against gravity.

A further alternative for holding the plates against sliding is illustrated in Fig. 4. A locking bolt 46 is threadably mounted in the wall of a channel member 14, opposite the mouth 32. The locking bolt 46 can be turned to tighten against the head 36 of an elongate member 30, thereby trapping the elongate member against further movement. When a plate is to be moved, or removed from the frame, the bolt 46 can be turned to release the elongate member 30. Locking bolts 46 may be provided at any convenient point or points along one or both frame members 14. There is preferably a bolt 46 near the top end of both frame members.

Figs. 5 and 6 show an alternative embodiment. Many features correspond to the features of Figs. 1 to 3 and are given the same reference numerals. In view of this, and the close similarities, it is only necessary to refer specifically to features which differ between the embodiments.

The frame of Figs. 5 and 6 (referred to by the reference 50) consists of two A-frames generally as described above, but connected together at three locations. Each connection consists of a rigid bar 52, which may be a square section plastics extrusion. At each end, each bar 52 is attached to a frame member 14 or a leg 22 by a nut and bolt assembly 54. The bolt extends through the frame member 14 or leg 22, and the bar 52, passing through appropriate apertures and/or the mouth 32. A nut allows the nut and bolt assembly 54 to be tightened to firmly brace the A-frames together. In the embodiment shown, there is a bar 52 near the lower end of the frame members 14, and two further bars 52 near the upper and lower ends of the legs 22.

The frame 50 collapses in a different manner to the frame 10. After the rear legs 22 have been folded towards the front frame members 14 by collapsing the braces 24, the nut and bolt assemblies 54 can be loosened

to allow the bars 52 to pivot relative to the frame member 14 or leg 22 about the axis of the bolt. Consequently, the frame member 14 and leg 22 at one side of the frame 50 can be moved up relative to the corresponding members at the other side of the frame 50 until the collapsed condition shown in Fig. 6 is reached. The collapsed frame 50 can be secured in this condition by means of a strap 56 which is attached at one end to one of the bars 52 and incorporates a fastening such as a buckle or hook and pile fastening of the type sold under the trade mark VELCRO.

It is envisaged that the frame members 14 and the elongate members 30 can conveniently be formed as plastics extrusions. The other components of the frame can be extruded or moulded from plastics or other materials. Sign plates of plastics materials are conventional. Consequently, the entire construction can be made of plastics material, thereby greatly reducing its weight. By virtue of the collapsible nature of the frame, and the light weight of the structure, the frame described above is conveniently portable. However, the light weight may give rise to some instability in use, particularly in high wind. Consequently, it may be desirable to incorporate a sturdy sheet of material 44 such as a woven plastics material slung between the

elongate members 26,28, as shown in Fig. 1. This provides a surface on which ballast can be supported to weigh down the sign and increase its stability. The sheet 44 may need to be removed if the frame is to be collapsed as shown in Fig. 6.

It will be apparent that many variations and modifications can be made to the apparatus described above without departing from the spirit and scope of the present invention.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

CLAIMS

1. A temporary road sign comprising a collapsible supporting frame and a sign plate which, in use, is supported by the frame, the frame comprising at least one frame member which cooperates with a corresponding portion of the plate to provide a sliding fit between the plate and the frame, the sliding fit permitting the plate to be slid with respect to the frame between a position in which the plate is mounted on the frame for use, and a position in which the plate is dismounted from the frame.

2. A sign according to claim 1, wherein the frame comprises two parallel frame members which each cooperate with a corresponding portion of the plate to provide a sliding fit as aforesaid.

3. A sign according to claim 1 or 2, wherein the or each frame member extends generally upwardly, in use, whereby the plate may be slid upwardly or downwardly for mounting on or dismounting from the frame.

4. A sign according to any preceding claim, wherein the frame comprises two forward members which, in use, are parallel and extend generally upwardly, and at least one rearward member which, in use, extends between the

ground and a point at or near the top of the forward members, the forward and rearward members being hingedly connected at the said point to allow the frame to be collapsed.

5. A sign according to claim 4, wherein the forward members are each cooperating frame members as aforesaid.

6. A sign according to claim 4 or 5, wherein the forward members are connected to each other by elongate connecting members.

7. A sign according to claim 6, wherein the elongate connecting members are hingedly attached to the forward members.

8. A sign according to claim 7, wherein the elongate connecting members are hingedly attached at one end to respective forward members, and are hingedly connected together at their other ends.

9. A sign according to any of claims 4 to 8, comprising two rearward members connected by elongate connecting members.

10. A sign according to claim 9, wherein the elongate

connecting members are hingedly attached to the rearward members.

11. A sign according to claim 10, wherein the elongate connecting members are hingedly attached at one end to respective rearward members, and are hingedly connected together at their other ends.

12. A sign according to claim 7, 8, 10 or 11, wherein releasable catch means are provided, operable to lock one or more of the hinge connections.

13. A sign according to any preceding claim, wherein at least one cooperating frame member provides an open elongate channel for receiving and engaging the corresponding portion of the plate.

14. A sign according to claim 13, wherein the channel has an elongate mouth which is narrower than the main region of the channel, the corresponding portion of the plate being sufficiently wide to be prevented from leaving the channel through the mouth, whereby the corresponding portion may slide along and relative to the channel.

15. A sign according to claim 14, wherein the channel

mouth comprises a flange which runs along an elongate edge of the mouth for slidably engaging a corresponding groove in the plate.

16. A sign according to claim 15, wherein the channel has a flange as aforesaid running along both elongate edges of the mouth.

17. A sign according to claim 15 or 16, wherein the corresponding portion of the plate consists of an elongate head whose transverse extent is greater than the transverse extent of the mouth and is attached to the plate by means of a neck, and a groove located between the plate and the head to one side of the neck for receiving the flange when the head is received in the channel.

18. A sign according to any preceding claim, further comprising releasable locking means operable to permit or prevent the frame and the plate sliding relative to each other.

19. A sign according to claim 18, wherein the locking means comprise a member mounted on the frame or plate and movable between a first position in which the plate or frame, respectively, is engaged to prevent sliding as

aforesaid, and a second position in which the plate or frame, respectively, is free to slide as aforesaid.

20. A sign according to claim 19, wherein the said member is a threaded member which is threadedly movable between the first and second positions.

21. A sign according to any preceding claim, wherein the frame member and/or the corresponding portion are extruded from plastics material.

22. A sign according to any preceding claim, wherein the frame incorporates a sheet of flexible material which provides a generally horizontal ballast-supporting surface when the frame is erect.

23. A supporting frame for a temporary road sign according to any preceding claim.

24. A sign plate for a temporary road sign according to any of claims 1 to 22.

25. A temporary road sign system comprising at least one frame according to claim 23, and a plurality of plates according to claim 24 and which are interchangeably mountable on the frame.

26. A temporary road sign substantially as described above with reference to the accompanying drawings.

27. Any novel subject matter or combination including novel subject matter disclosed, whether or not within the scope of or relating to the same invention as any of the preceding claims.

Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

Application number

9123662.0

Relevant Technical fields

(i) UK CI (Edition K) E1G; G5C

(ii) Int CI (Edition 5) E01F; G09F

Databases (see over)

(i) UK Patent Office

(ii)

Search Examiner

D HAWORTH

Date of Search

28 JANUARY 1992

Documents considered relevant following a search in respect of claims

1-23, 25 AND 26

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
A	GB 1526855 A	



Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

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